

CLAIMS

What is claimed is:

1. A method for forming a plastic lens convex on one side and concave on the other side and having its maximum thickness in the central region of the lens and diminishing gradually in thickness radially towards the periphery of the lens, the method comprising the steps:

5 providing a lens blank of substantially uniform thickness comprising at least one layer of a thermoplastic material;

placing said lens blank between opposed concave and convex platens for forming, respectively, convex and concave surfaces on said lens blank, said concave platen holding a volume of a polymerizable composition comprising a monomer or an
10 oligomer on a forming surface thereof, and wherein the radius of curvature of said convex platen and the radius of curvature of said concave platen correspond , respectively, to the relationship;

$$r_1 + r_2 = t \left(\frac{n - 1}{n} \right)$$

heating and pressing said platens together with said lens blank therebetween,
15 said heating and pressing being sufficient to deform said lens blank and to cause polymerization of said polymerizable composition to take place to provide a layer of non-uniform thickness on the convex surface on said deformed lens blank, said layer of non-uniform thickness having maximum thickness in its central region and diminishing gradually in thickness radially towards the periphery of said layer, whereby there is

20 formed a shaped lens, concave on one side and convex on the other, said lens having its maximum thickness in the central region thereof and diminishing gradually in thickness radially towards the periphery of said lens; and

removing said shaped lens from between said platens.

2. The method as defined in Claim 1 wherein said lens blank comprises a
25 layer of a light polarizing material arranged between and bonded to each of first and second layers of thermoplastic material.

3. The method as defined in Claim 2 wherein said first layer of
thermoplastic material comprises cellulose acetate butyrate or cellulose triacetate and
said second layer of thermoplastic material comprises polycarbonate, and wherein said
30 second layer forms said concave surface of said lens.

4. The method as defined in Claim 2 wherein said first layer of
thermoplastic material comprises cellulose acetate butyrate or cellulose triacetate and
said second layer of thermoplastic material comprises a colored layer of polycarbonate
and a clear layer of polycarbonate having an outer layer of a high scratch-resistant
35 material, and wherein said clear layer of polycarbonate forms said concave surface of
said lens.

5. The method as defined in Claim 4 wherein said light-polarizing layer is
positioned closer to said convex surface of said lens than to said concave surface of
said lens.

40 6. The method as defined in Claim 1 wherein said polymerizable

composition comprises a mixture of tetraethylene glycol dimethacrylate and dipentaerythritol pentacrylate.

7. A shaped plastic lens convex on one side and concave on the other side and having substantially no optical power comprising a first substantially uniformly
45 thick layer of thermoplastic polymeric material and a second layer of thermoplastic polymeric material of non-uniform thickness and having high scratch resistance, said second layer having maximum thickness in the central region thereof and diminishing gradually in thickness radially toward the periphery thereof, wherein said first substantially uniformly thick layer forms said concave side of the lens and said second
50 layer forms said convex side of the lens.

8. The shaped plastic lens as defined in Claim 7 and further including a layer of a light-polarizing material positioned in said first layer of said lens.

9. The shaped plastic lens as defined in Claim 8 wherein said first layer of thermoplastic material comprises cellulose triacetate or cellulose acetate butyrate and
55 said second layer of thermoplastic material comprises polycarbonate, said light-polarizing layer being positioned between said cellulose triacetate or cellulose acetate butyrate layer and said polycarbonate layer and said polycarbonate layer forming said concave side of said lens.

10. The shaped plastic lens as defined in Claim 9 wherein said
60 polycarbonate layer of said lens comprises a colored layer of polycarbonate and a clear layer of polycarbonate having an outer surface of a high scratch-resistant material, said high scratch-resistant material forming said concave surface of said lens.

11. The shaped plastic lens as defined in Claim 10 wherein said light-
polarizing layer is positioned closer to said convex side of said lens than to said
65 concave side of said lens.